

Sequence Listing

Sequence Listing

5 <110> Chen, Jian
 Filvaroff, Ellen
 Goddard, Audrey
 Gurney, Austin
 Li, Hanzhong
 Wood, William I.

10 <120> IL-17 HOMOLOGOUS POLYPEPTIDES AND THERAPEUTIC USES
 THEREOF

15 <130> P1381-R1
 <141> 1999-05-14
 <150> US 60/085,579
 <151> 1998-05-15

20 <150> US 60/113,621
 <151> 1998-12-23
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 <212> PRT
 <213> Homo sapiens

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 1 5 10 15
 35 Phe Leu Gly Leu Gly Gln Pro Arg Ser Pro Lys Ser Lys Arg Lys
 20 25 30
 Gly Gln Gly Arg Pro Gly Pro Leu Ala Pro Gly Pro His Gln Val
 35 40 45
 40 Pro Leu Asp Leu Val Ser Arg Met Lys Pro Tyr Ala Arg Met Glu
 50 55 60
 45 Glu Tyr Glu Arg Asn Ile Glu Glu Met Val Ala Gln Leu Arg Asn
 65 70 75
 Ser Ser Glu Leu Ala Gln Arg Lys Cys Glu Val Asn Leu Gln Leu
 80 85 90

Trp Met Ser Asn Lys Arg Ser Leu Ser Pro Trp Gly Tyr Ser Ile
 95 100 105
 5 Asn His Asp Pro Ser Arg Ile Pro Val Asp Leu Pro Glu Ala Arg
 110 115 120
 Cys Leu Cys Leu Gly Cys Val Asn Pro Phe Thr Met Gln Glu Asp
 125 130 135
 10 Arg Ser Met Val Ser Val Pro Val Phe Ser Gln Val Pro Val Arg
 140 145 150
 Arg Arg Leu Cys Pro Pro Pro Pro Arg Thr Gly Pro Cys Arg Gln
 155 160 165
 15 Arg Ala Val Met Glu Thr Ile Ala Val Gly Cys Thr Cys Ile Phe
 170 175 180
 20 <210> 2
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 <213> Homo sapiens
 25 <400> 2
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 cctcacaacc tgctgtttct tcttaccatt tccatcttcc tggggctggg 100
 30 ccagcccagg agccccaaaa gcaagaggaa ggggcaaggg cggcctgggc 150
 ccctggcccc tggccctcac caggtgccac tggacctggg gtcacggatg 200
 aaaccgtatg cccgcgatga ggagtatgag aggaacatcg aggagatggg 250
 35 ggcccagctg aggaacagct cagagctggc ccagagaaag tgtgaggtca 300
 acttgcagct gtggatgtcc aacaagagga gcctgtctcc ctggggctac 350
 40 agcatcaacc acgaccccag ccgtatcccc gtggacctgc cggaggcagc 400
 gtgcctgtgt ctgggctgtg tgaacccctt caccatgcag gaggaccgca 450
 gcatggtgag cgtgccggtg ttcagccagg ttctgtgtcg ccgccgcctc 500
 45 tgcccggcac cgccccgcac agggccttgc cgccagcgcg cagtcatgga 550
 gaccatcgct gtgggctgca cctgcattct ctgaatcacc tggcccagaa 600

gccaggccag cagccccgaga ccatacctcct tgcacctttg tgccaagaaa 650

ggcctatgaa aagtaaacac tgacttttga aagcaag 687

5

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<211> 197

<212> PRT

<213> Homo sapiens

10

<400> 3

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Thr | Leu | Leu | Pro | Gly | Leu | Leu | Phe | Leu | Thr | Trp | Leu | His | Thr |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

15

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Leu | Ala | His | His | Asp | Pro | Ser | Leu | Arg | Gly | His | Pro | His | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |

20

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Gly | Thr | Pro | His | Cys | Tyr | Ser | Ala | Glu | Glu | Leu | Pro | Leu | Gly |
| | | | | 35 | | | | | 40 | | | | | 45 |

25

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ala | Pro | Pro | His | Leu | Leu | Ala | Arg | Gly | Ala | Lys | Trp | Gly | Gln |
| | | | | 50 | | | | | 55 | | | | | 60 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Leu | Pro | Val | Ala | Leu | Val | Ser | Ser | Leu | Glu | Ala | Ala | Ser | His |
| | | | | 65 | | | | | 70 | | | | | 75 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Arg | His | Glu | Arg | Pro | Ser | Ala | Thr | Thr | Gln | Cys | Pro | Val |
| | | | | 80 | | | | | 85 | | | | | 90 |

30

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Arg | Pro | Glu | Glu | Val | Leu | Glu | Ala | Asp | Thr | His | Gln | Arg | Ser |
| | | | | 95 | | | | | 100 | | | | | 105 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ser | Pro | Trp | Arg | Tyr | Arg | Val | Asp | Thr | Asp | Glu | Asp | Arg | Tyr |
| | | | | 110 | | | | | 115 | | | | | 120 |

35

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gln | Lys | Leu | Ala | Phe | Ala | Glu | Cys | Leu | Cys | Arg | Gly | Cys | Ile |
| | | | | 125 | | | | | 130 | | | | | 135 |

40

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ala | Arg | Thr | Gly | Arg | Glu | Thr | Ala | Ala | Leu | Asn | Ser | Val | Arg |
| | | | | 140 | | | | | 145 | | | | | 150 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Leu | Gln | Ser | Leu | Leu | Val | Leu | Arg | Arg | Arg | Pro | Cys | Ser | Arg |
| | | | | 155 | | | | | 160 | | | | | 165 |

45

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Gly | Ser | Gly | Leu | Pro | Thr | Pro | Gly | Ala | Phe | Ala | Phe | His | Thr |
| | | | | 170 | | | | | 175 | | | | | 180 |

Glu Phe Ile His Val Pro Val Gly Cys Thr Cys Val Leu Pro Arg
 185 190 195

Ser Val
 197

5

<210> 4
 <211> 1047
 <212> DNA

10 <213> Homo sapiens

<400> 4

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 15 tgacgctcct ccccggcctc ctgtttctga cctggctgca cacatgcctg 100
 gccaccatg acccctcctc cagggggcac cccacagtc acggtaacccc 150
 20 aactgctac teggctgagg aactgccctc cggccaggcc cccccacacc 200
 tgctggctcg aggtgccaag tgggggcagg ctttgctgt agccctggtg 250
 tccagcctgg aggcagcaag ccacaggggg aggcacgaga ggcctcagc 300
 25 tacgaccag tgcccggtgc tgcggccgga ggaggtgtt gaggcagaca 350
 cccaccagc ctccatctca ccctggagat accgtgtgga cacggatgag 400
 gacgctatc cacagaagct ggcccttcgc gagtgcctgt gcagaggtg 450
 30 tatcgatgca cggacgggccc gcgagacagc tgcgtcaac tccgtgcggc 500
 tgctccagag cctgctggtg ctgcgccgcc ggcctgtctc ccgcgacggc 550
 35 tgggggctcc ccacacctg ggcccttgcc ttccacacc agttcatcca 600
 cgtccccgc ggctgcacct gcgtgctgcc ccgttcagt tgaccgccga 650
 ggccgtgggg ccctagact ggacacgtgt gctccccaga gggcaccccc 700
 40 tatttatgtg tatttattgt tatttatatg cctcccccaa cactaccct 750
 ggggtctggg cattccccgt gtctggagga cagcccccca ctgttctcct 800
 45 catctccagc ctcagtagtt gggggtagaa ggagtcagc acctcttcca 850
 gccctaaaag ctgcagaaaa ggtgtcacac ggetgcctgt accttggtc 900

cctgtcctgc tcccggcttc ccttacccta tcactggcct caggccccgc 950
 aggetgcctc ttcccaacct ccttggaagt acccctgttt cttaaacaat 1000
 5 tatttaagtg tacgtgtatt attaaactga tgaacacatc cccaaaa 1047
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 10 <213> Homo sapiens
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 15 <223> unknown base
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 20 cctggttctt gtccttggg actctgggac ttacaccagt ggcaccctg 100
 gctcnnnnnn nnnnaattc ggtacgagge tggggttcag gcgggcagca 150
 25 gctgcaggct gaccttgcag cttggcgaa tggactggcc tcacaacctg 200
 ctgtttcttc ttaccatttc catcttcctg gggtcggcc agcccaggag 250
 cccaaaaagc aagaggaagg ggcaaggggc gcctgggccc ctggtccctg 300
 30 gccctcacca ggtgccactg gacctggtg cacggatgaa accgtatgcc 350
 cgcattgagg agtatgagag gaacatcgag gagatgttgg ccagctgag 400
 gaacagtcca gagctggccc agagaaagt tgaggtaaac ttgcagctgt 450
 35 ggatgtccaa caagaggagc ctgtctcctt ggggtacag catcaaccac 500
 gacccagcc gtatccccgt ggacctccg aggcacggtg cctgtgtctg 550
 40 ggcttgtgtg aaccccttca ccatgcagga ggaccgcagc atgggtgagc 600
 tgccggtgtt cagccaggtt cctgtgcgcc gcgcctctg cccgccaccg 650
 cccgcacag ggcttgccg ccagcgcgca gtcattggaga ccacgctgt 700
 45 ggggtgcacc tgcattctt gaatcgacct gggccagaag ccaggccagc 750
 agcccgagac catctctctt gcaccttgt gccaaagaag gcctatgaaa 800

agtaaacact gacttttgaa agcaaaaaaa 830

<210> 6

5 <211> 397

<212> DNA

<213> Artificial

<220>

10 <221> unknown

<222> 10, 150, 267

<223> unknown base

<400> 6

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ctcacaacct gctgtttctt cttaccatctt ccattcttctt ggggctgggc 100

agccaggagc cccaaaagca agaggaaggc gcaaggcgcg cctgggccc 150

20 tggcctggcc tcaccagggt cactggacc tgggtgcacg gatgaaaccg 200

tatgcccgcga tggaggagta tgagaggaaac atcgaggaga tgggtggccca 250

25 gctgaggaaac agctcanaag ctggcccaga gaaagtgtga ggtcaacttg 300

cagctgtgga tgtccaacaa gaaggagcct gtctcccttg gggctacaag 350

catcaaccac cgaccccagc cgtatccccg tgggaccttg ccgggac 397

30

<210> 7

<211> 230

<212> DNA

<213> Artificial

35

<400> 7

cacggatgag gaccgctatc cacagaagct ggccttcgcc gactgcctgt 50

gcagaggctg tatcgatgca cggacgggcc gcgagacagc tgcgctcaac 100

40

tccgtgcggc tgctccagag cctgctggtg ctgcgccgcc ggccttctc 150

ccgcgacggc tcggggctcc ccacacctgg ggcctttgcc ttccacaccg 200

45 agttcatcca cgtccccgtc ggctgcacct 230

<210> 8

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<212> DNA

<213> Artificial sequence

<400> 8

5 atccacagaa gctggccttc gccg 24

<210> 9

<211> 24

<212> DNA

10 <213> Artificial sequence

<400> 9

gggacgtgga tgaactcggg gtgg 24

15 <210> 10

<211> 40

<212> DNA

<213> Artificial sequence

20 <400> 10

tatccacaga agctggcctt cgccgagtgcc ctgtgcagag 40

<210> 11

<211> 155

25 <212> PRT

<213> Human

<400> 11

| | | |
|----|---|----|
| 30 | Met Thr Pro Gly Lys Thr Ser Leu Val Ser Leu Leu Leu Leu Leu | 15 |
| | 1 5 10 | |

| | | |
|--|---|----|
| | Ser Leu Glu Ala Ile Val Lys Ala Gly Ile Thr Ile Pro Arg Asn | 30 |
| | 20 25 | |

| | | |
|----|---|----|
| 35 | Pro Gly Cys Pro Asn Ser Glu Asp Lys Asn Phe Pro Arg Thr Val | 45 |
| | 35 40 | |

| | | |
|--|---|----|
| | Met Val Asn Leu Asn Ile His Asn Arg Asn Thr Asn Thr Asn Pro | 60 |
| | 50 55 | |

| | | |
|----|---|----|
| 40 | Lys Arg Ser Ser Asp Tyr Tyr Asn Arg Ser Thr Ser Pro Trp Asn | 75 |
| | 65 70 | |

| | | |
|----|---|----|
| 45 | Leu His Arg Asn Glu Asp Pro Glu Arg Tyr Pro Ser Val Ile Trp | 90 |
| | 80 85 | |

| | | |
|--|---|-----|
| | Glu Ala Lys Cys Arg His Leu Gly Cys Ile Asn Ala Asp Gly Asn | 105 |
| | 95 100 | |

Val Asp Tyr His Met Asn Ser Val Pro Ile Gln Gln Glu Ile Leu
110 115 120

5 Val Leu Arg Arg Glu Pro Pro His Cys Pro Asn Ser Phe Arg Leu
125 130 135

Glu Lys Ile Leu Val Ser Val Gly Cys Thr Cys Val Thr Pro Ile
140 145 150

10 Val His His Val Ala
155

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15 <211> 408
<212> PRT
<213> Artificial

<220>
20 <223> Artificial Sequence 1-408

<400> 12
Met Asp Trp Pro His Asn Leu Leu Phe Leu Leu Thr Ile Ser Ile
1 5 10 15

25 Phe Leu Gly Leu Gly Gln Pro Arg Ser Pro Lys Ser Lys Arg Lys
20 25 30

Gly Gln Gly Arg Pro Gly Pro Leu Ala Pro Gly Pro His Gln Val
30 35 40 45

Pro Leu Asp Leu Val Ser Arg Met Lys Pro Tyr Ala Arg Met Glu
50 55 60

35 Glu Tyr Glu Arg Asn Ile Glu Glu Met Val Ala Gln Leu Arg Asn
65 70 75

Ser Ser Glu Leu Ala Gln Arg Lys Cys Glu Val Asn Leu Gln Leu
80 85 90

40 Trp Met Ser Asn Lys Arg Ser Leu Ser Pro Trp Gly Tyr Ser Ile
95 100 105

Asn His Asp Pro Ser Arg Ile Pro Val Asp Leu Pro Glu Ala Arg
110 115 120

45 Cys Leu Cys Leu Gly Cys Val Asn Pro Phe Thr Met Gln Glu Asp
125 130 135

| | | |
|----|--|---------|
| | Arg Ser Met Val Ser Val Pro Val Phe Ser Gln Val Pro Val Arg | |
| | 140 | 145 150 |
| 5 | Arg Arg Leu Cys Pro Pro Pro Pro Arg Thr Gly Pro Cys Arg Gln | |
| | 155 | 160 165 |
| | Arg Ala Val Met Glu Thr Ile Ala Val Gly Cys Thr Cys Ile Phe | |
| | 170 | 175 180 |
| 10 | Pro Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu | |
| | 185 | 190 195 |
| 15 | Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp | |
| | 200 | 205 210 |
| | Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val | |
| | 215 | 220 225 |
| 20 | Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val | |
| | 230 | 235 240 |
| | Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu | |
| | 245 | 250 255 |
| 25 | Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu | |
| | 260 | 265 270 |
| 30 | His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser | |
| | 275 | 280 285 |
| | Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala | |
| | 290 | 295 300 |
| 35 | Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser | |
| | 305 | 310 315 |
| | Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val. | |
| | 320 | 325 330 |
| 40 | Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn | |
| | 335 | 340 345 |
| | Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp | |
| | 350 | 355 360 |
| 45 | Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys | |
| | 365 | 370 375 |

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 380 385 390

5 Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 395 400 405

Pro Gly Lys
 408

10 <210> 13
 <211> 425
 <212> PRT
 <213> Artificial

15 <220>
 <223> Artificial Sequence 1-425

<400> 13

20 Met Thr Leu Leu Pro Gly Leu Leu Phe Leu Thr Trp Leu His Thr
 1 5 10 15

Cys Leu Ala His His Asp Pro Ser Leu Arg Gly His Pro His Ser
 20 25 30

25 His Gly Thr Pro His Cys Tyr Ser Ala Glu Glu Leu Pro Leu Gly
 35 40 45

Gln Ala Pro Pro His Leu Leu Ala Arg Gly Ala Lys Trp Gly Gln
 50 55 60

30 Ala Leu Pro Val Ala Leu Val Ser Ser Leu Glu Ala Ala Ser His
 65 70 75

35 Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val
 80 85 90

Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser
 95 100 105

40 Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr
 110 115 120

Pro Gln Lys Leu Ala Phe Ala Glu Cys Leu Cys Arg Gly Cys Ile
 125 130 135

45 Asp Ala Arg Thr Gly Arg Glu Thr Ala Ala Leu Asn Ser Val Arg
 140 145 150

| | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Leu | Leu | Gln | Ser | Leu | Leu | Val | Leu | Arg | Arg | Arg | Pro | Cys | Ser | Arg | |
| | | | | | 155 | | | | | 160 | | | | | 165 | |
| 5 | Asp | Gly | Ser | Gly | Leu | Pro | Thr | Pro | Gly | Ala | Phe | Ala | Phe | His | Thr | |
| | | | | | 170 | | | | | 175 | | | | | 180 | |
| | Glu | Phe | Ile | His | Val | Pro | Val | Gly | Cys | Thr | Cys | Val | Leu | Pro | Arg | |
| | | | | | 185 | | | | | 190 | | | | | 195 | |
| 10 | Ser | Val | Pro | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | |
| | | | | | 200 | | | | | 205 | | | | | 210 | |
| | Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | |
| 15 | | | | | 215 | | | | | 220 | | | | | 225 | |
| | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | |
| | | | | | 230 | | | | | 235 | | | | | 240 | |
| 20 | Val | Val | Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | |
| | | | | | 245 | | | | | 250 | | | | | 255 | |
| | Tyr | Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | |
| | | | | | 260 | | | | | 265 | | | | | 270 | |
| 25 | Glu | Glu | Gln | Tyr | Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | |
| | | | | | 275 | | | | | 280 | | | | | 285 | |
| | Val | Leu | His | Gln | Asp | Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | |
| 30 | | | | | 290 | | | | | 295 | | | | | 300 | |
| | Val | Ser | Asn | Lys | Ala | Leu | Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | |
| | | | | | 305 | | | | | 310 | | | | | 315 | |
| 35 | Lys | Ala | Lys | Gly | Gln | Pro | Arg | Glu | Pro | Gln | Val | Tyr | Thr | Leu | Pro | |
| | | | | | 320 | | | | | 325 | | | | | 330 | |
| | Pro | Ser | Arg | Glu | Glu | Met | Thr | Lys | Asn | Gln | Val | Ser | Leu | Thr | Cys | |
| | | | | | 335 | | | | | 340 | | | | | 345 | |
| 40 | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | Ile | Ala | Val | Glu | Trp | Glu | |
| | | | | | 350 | | | | | 355 | | | | | 360 | |
| | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | Thr | Thr | Pro | Pro | Val | |
| 45 | | | | | 365 | | | | | 370 | | | | | 375 | |
| | Leu | Asp | Ser | Asp | Gly | Ser | Phe | Phe | Leu | Tyr | Ser | Lys | Leu | Thr | Val | |
| | | | | | 380 | | | | | 385 | | | | | 390 | |

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
 395 400 405

5 Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 410 415 420

Leu Ser Pro Gly Lys
 425

10 <210> 14
 <211> 212
 <212> PRT
 <213> Homo sapiens

15 <400> 14
 Met Asn Ser Phe Ser Thr Ser Ala Phe Gly Pro Val Ala Phe Ser
 1 5 10 15

20 Leu Gly Leu Leu Leu Val Leu Pro Ala Ala Phe Pro Ala Pro Val
 20 25 30

Pro Pro Gly Glu Asp Ser Lys Asp Val Ala Ala Pro His Arg Gln
 35 40 45

25 Pro Leu Thr Ser Ser Glu Arg Ile Asp Lys Gln Ile Arg Tyr Ile
 50 55 60

Leu Asp Gly Ile Ser Ala Leu Arg Lys Glu Thr Cys Asn Lys Ser
 30 65 70 75

Asn Met Cys Glu Ser Ser Lys Glu Ala Leu Ala Glu Asn Asn Leu
 80 85 90

35 Asn Leu Pro Lys Met Ala Glu Lys Asp Gly Cys Phe Gln Ser Gly
 95 100 105

Phe Asn Glu Glu Thr Cys Leu Val Lys Ile Ile Thr Gly Leu Leu
 110 115 120

40 Glu Phe Glu Val Tyr Leu Glu Tyr Leu Gln Asn Arg Phe Glu Ser
 125 130 135

Ser Glu Glu Gln Ala Arg Ala Val Gln Met Ser Thr Lys Val Leu
 45 140 145 150

Ile Gln Phe Leu Gln Lys Lys Ala Lys Asn Leu Asp Ala Ile Thr
 155 160 165

Thr Pro Asp Pro Thr Thr Asn Ala Ser Leu Leu Thr Lys Leu Gln
 170 175 180

5 Ala Gln Asn Gln Trp Leu Gln Asp Met Thr Thr His Leu Ile Leu
 185 190 195

Arg Ser Phe Lys Glu Phe Leu Gln Ser Ser Leu Arg Ala Leu Arg
 200 205 210

10 Gln Met
 212

<210> 15
 15 <211> 320
 <212> PRT
 <213> Homo sapiens

<400> 15
 20 Met Gly Ala Ala Arg Ser Pro Pro Ser Ala Val Pro Gly Pro Leu
 1 5 10 15

Leu Gly Leu Leu Leu Leu Leu Leu Gly Val Leu Ala Pro Gly Gly
 20 25 30

25 Ala Ser Leu Arg Leu Leu Asp His Arg Ala Leu Val Cys Ser Gln
 35 40 45

Pro Gly Leu Asn Cys Thr Val Lys Asn Ser Thr Cys Leu Asp Asp
 30 50 55 60

Ser Trp Ile His Pro Arg Asn Leu Thr Pro Ser Ser Pro Lys Asp
 65 70 75

35 Leu Gln Ile Gln Leu His Phe Ala His Thr Gln Gln Gly Asp Leu
 80 85 90

Phe Pro Val Ala His Ile Glu Trp Thr Leu Gln Thr Asp Ala Ser
 95 100 105

40 Ile Leu Tyr Leu Glu Gly Ala Glu Leu Ser Val Leu Gln Leu Asn
 110 115 120

Thr Asn Glu Arg Leu Cys Val Arg Phe Glu Phe Leu Ser Lys Leu
 45 125 130 135

Arg His His His Arg Arg Trp Arg Phe Thr Phe Ser His Phe Val
 140 145 150

Val Asp Pro Asp Gln Glu Tyr Glu Val Thr Val His His Leu Pro
 155 160 165
 5 Lys Pro Ile Pro Asp Gly Asp Pro Asn His Gln Ser Lys Asn Phe
 170 175 180
 Leu Val Pro Asp Cys Glu His Ala Arg Met Lys Val Thr Thr Pro
 185 190 195
 10 Cys Met Ser Ser Gly Ser Leu Trp Asp Pro Asn Ile Thr Val Glu
 200 205 210
 Thr Leu Glu Ala His Gln Leu Arg Val Ser Phe Thr Leu Trp Asn
 215 220 225
 Glu Ser Thr His Tyr Gln Ile Leu Leu Thr Ser Phe Pro His Met
 230 235 240
 20 Glu Asn His Ser Cys Phe Glu His Met His His Ile Pro Ala Pro
 245 250 255
 Arg Pro Glu Glu Phe His Gln Arg Ser Asn Val Thr Leu Thr Leu
 260 265 270
 25 Arg Asn Leu Lys Gly Cys Cys Arg His Gln Val Gln Ile Gln Pro
 275 280 285
 Phe Phe Ser Ser Cys Leu Asn Asp Cys Leu Arg His Ser Ala Thr
 290 295 300
 30 Val Ser Cys Pro Glu Met Pro Asp Thr Pro Glu Pro Ile Pro Asp
 305 310 315
 35 Tyr Met Pro Leu Trp
 320
 <210> 16
 <211> 543
 40 <212> DNA
 <213> Homo sapiens
 <400> 16
 atggactggc ctcaaacct gctgtttctt cttaccattt ccattcttct 50
 45 ggggctgggc cagcccagga gcccacaaag caagaggaag gggcaagggc 100
 ggctggggcc cctggcccct ggccttcacc aggtgccact ggacctggtg 150

tcacggatga aaccgtatgc ccgcatggag gagtatgaga ggaacatcga 200
 ggagatgggtg gccacgtga ggaacagctc agagctggcc cagagaaagt 250
 5 gtgaggtcaa cttgcagctg tggatgtcca acaagaggag cctgtctccc 300
 tggggctaca gcatcaacca cgaccccgag cgtatccccg tggacctgcc 350
 10 ggaggcacgg tgctgtgtc tgggtgtgt gaaccccttc accatgcagg 400
 aggaccgcag catggtgagc gtgccggtgt tcagccaggt tctgtgccc 450
 cgccgctct gcccgccacc gccccgcaca gggccttgcc gccagcgcg 500
 15 agtcatggag accatcgtg tgggtgcac ctgcatcttc tga 543

 <210> 17
 <211> 594
 20 <212> DNA
 <213> Homo sapiens

 <400> 17
 atgacgtcc tccccggcct cctgtttctg acctggctgc acacatgcct 50
 25 ggcccacat gaccctccc tcagggggca cccccacagt cagggtacct 100
 cacactgcta ctcggtgag gaactgccc tcggccaggc cccccacac 150
 30 ctgctggctc gaggtgcca gtgggggcag gctttgctg tagcctgggt 200
 gtccagcctg gaggcagcaa gccacagggg gaggcacgag aggcctcag 250
 ctacgacca gtgcccgtg ctgcggcccg aggaggtgtt ggaggcagac 300
 35 acccaccagc gctccatct accctggaga taccgtgtgg acacggatga 350
 ggaccgctat ccacagaagc tggccttcgc cgagtgcctg tgcagaggct 400
 40 gtatcgatgc acggacgggc cgcgagacag ctgcgctcaa ctccgtgcgg 450
 ctgctccaga gctgtgtgt gctgcgccg cgccctgct cccgcgacgg 500
 ctggggctc cccacacctg gggccttgc ctccacacc gagttcatcc 550
 45 acgtccccgt cggctgcacc tgcgtgctgc ccgttcagt gtga 594

 <210> 18

<211> 9
 <212> PRT
 <213> Artificial

5 <220>
 <223> Artificial sequence 1-9

<400> 18
 Gly His His His His His His His His
 10 1 5 9

<210> 19
 <211> 157
 <212> PRT
 15 <213> Homo sapiens

<400> 19
 Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Lys Pro Val Ala His
 1 5 10 15
 20 Val Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn
 20 25 30
 25 Arg Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp
 35 40 45
 Asn Gln Leu Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser
 50 55 60
 30 Gln Val Leu Phe Lys Gly Gln Gly Cys Pro Ser Thr His Val Leu
 65 70 75
 Leu Thr His Thr Ile Ser Arg Ile Ala Val Ser Tyr Gln Thr Lys
 80 85 90
 35 Val Asn Leu Leu Ser Ala Ile Lys Ser Pro Cys Gln Arg Glu Thr
 95 100 105
 Pro Glu Gly Ala Glu Ala Lys Pro Trp Tyr Glu Pro Ile Tyr Leu
 110 115 120
 Gly Gly Val Phe Gln Leu Glu Lys Gly Asp Arg Leu Ser Ala Glu
 125 130 135
 45 Ile Asn Arg Pro Asp Tyr Leu Asp Phe Ala Glu Ser Gly Gln Val
 140 145 150
 Tyr Phe Gly Ile Ile Ala Leu

155 157

<210> 20
 <211> 21
 5 <212> DNA
 <213> Artificial

 <220>
 <223> Artificial sequence 1-21
 10
 <400> 20
 ctgtacctcg aggggtgcaga g 21

 <210> 21
 15 <211> 58
 <212> DNA
 <213> Artificial

 <220>
 20 <223> Artificial sequence 1-58

 <400> 21
 cccaagcttg ggtcaatgat gatgatgatg atgatgatgc cacaggggca 50
 25 tgtagtcc 58

 <210> 22
 <211> 328
 <212> PRT
 30 <213> Homo sapiens

 <400> 22
 Met Gly Ala Ala Arg Ser Pro Pro Ser Ala Val Pro Gly Pro Leu
 1 5 10 15
 35 Leu Gly Leu Leu Leu Leu Leu Gly Val Leu Ala Pro Gly Gly
 20 25 30
 Ala Ser Leu Arg Leu Leu Asp His Arg Ala Leu Val Cys Ser Gln
 40 35 40 45
 Pro Gly Leu Asn Cys Thr Val Lys Asn Ser Thr Cys Leu Asp Asp
 50 55 60
 45 Ser Trp Ile His Pro Arg Asn Leu Thr Pro Ser Ser Pro Lys Asp
 65 70 75

| | | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Leu | Gln | Ile | Gln | Leu | His | Phe | Ala | His | Thr | Gln | Gln | Gly | Asp | Leu | 80 | 85 | 90 |
| 5 | Phe | Pro | Val | Ala | His | Ile | Glu | Trp | Thr | Leu | Gln | Thr | Asp | Ala | Ser | 95 | 100 | 105 |
| | Ile | Leu | Tyr | Leu | Glu | Gly | Ala | Glu | Leu | Ser | Val | Leu | Gln | Leu | Asn | 110 | 115 | 120 |
| 10 | Thr | Asn | Glu | Arg | Leu | Cys | Val | Arg | Phe | Glu | Phe | Leu | Ser | Lys | Leu | 125 | 130 | 135 |
| | Arg | His | His | His | Arg | Arg | Trp | Arg | Phe | Thr | Phe | Ser | His | Phe | Val | 140 | 145 | 150 |
| 15 | Val | Asp | Pro | Asp | Gln | Glu | Tyr | Glu | Val | Thr | Val | His | His | Leu | Pro | 155 | 160 | 165 |
| | Lys | Pro | Ile | Pro | Asp | Gly | Asp | Pro | Asn | His | Gln | Ser | Lys | Asn | Phe | 170 | 175 | 180 |
| 20 | Leu | Val | Pro | Asp | Cys | Glu | His | Ala | Arg | Met | Lys | Val | Thr | Thr | Pro | 185 | 190 | 195 |
| 25 | Cys | Met | Ser | Ser | Gly | Ser | Leu | Trp | Asp | Pro | Asn | Ile | Thr | Val | Glu | 200 | 205 | 210 |
| | Thr | Leu | Glu | Ala | His | Gln | Leu | Arg | Val | Ser | Phe | Thr | Leu | Trp | Asn | 215 | 220 | 225 |
| 30 | Glu | Ser | Thr | His | Tyr | Gln | Ile | Leu | Leu | Thr | Ser | Phe | Pro | His | Met | 230 | 235 | 240 |
| | Glu | Asn | His | Ser | Cys | Phe | Glu | His | Met | His | His | Ile | Pro | Ala | Pro | 245 | 250 | 255 |
| 35 | Arg | Pro | Glu | Glu | Phe | His | Gln | Arg | Ser | Asn | Val | Thr | Leu | Thr | Leu | 260 | 265 | 270 |
| 40 | Arg | Asn | Leu | Lys | Gly | Cys | Cys | Arg | His | Gln | Val | Gln | Ile | Gln | Pro | 275 | 280 | 285 |
| | Phe | Phe | Ser | Ser | Cys | Leu | Asn | Asp | Cys | Leu | Arg | His | Ser | Ala | Thr | 290 | 295 | 300 |
| 45 | Val | Ser | Cys | Pro | Glu | Met | Pro | Asp | Thr | Pro | Glu | Pro | Ile | Pro | Asp | 305 | 310 | 315 |

Tyr Met Pro Leu Trp His His His His His His His His
 320 325 328

5 <210> 23
 <211> 175
 <212> PRT
 <213> Artificial

10 <220>
 <223> Artificial sequence 1-175

<400> 23
 Ile Phe Leu Gly Leu Gly Gln Pro Arg Ser Pro Lys Ser Lys Arg
 1 5 10 15

15 Lys Gly Gln Gly Arg Pro Gly Pro Leu Ala Pro Gly Pro His Gln
 20 25 30

20 Val Pro Leu Asp Leu Val Ser Arg Met Lys Pro Tyr Ala Arg Met
 35 40 45

Glu Glu Tyr Glu Arg Asn Ile Glu Glu Met Val Ala Gln Leu Arg
 50 55 60

25 Asn Ser Ser Glu Leu Ala Gln Arg Lys Cys Glu Val Asn Leu Gln
 65 70 75

Leu Trp Met Ser Asn Lys Arg Ser Leu Ser Pro Trp Gly Tyr Ser
 80 85 90

30 Ile Asn His Asp Pro Ser Arg Ile Pro Val Asp Leu Pro Glu Ala
 95 100 105

35 Arg Cys Leu Cys Leu Gly Cys Val Asn Pro Phe Thr Met Gln Glu
 110 115 120

Asp Arg Ser Met Val Ser Val Pro Val Phe Ser Gln Val Pro Val
 125 130 135

40 Arg Arg Arg Leu Cys Pro Pro Pro Pro Arg Thr Gly Pro Cys Arg
 140 145 150

Gln Arg Ala Val Met Glu Thr Ile Ala Val Gly Cys Thr Cys Ile
 155 160 165

45 Phe Gly His His His His His His His His
 170 175

<210> 24
 <211> 206
 <212> PRT
 <213> Artificial

5

<220>
 <223> Artificial sequence 1-206

<400> 24

| | | |
|----|---|-----|
| 10 | Met Thr Leu Leu Pro Gly Leu Leu Phe Leu Thr Trp Leu His Thr | 15 |
| | 1 5 10 | |
| | Cys Leu Ala His His Asp Pro Ser Leu Arg Gly His Pro His Ser | 30 |
| | 20 25 | |
| 15 | His Gly Thr Pro His Cys Tyr Ser Ala Glu Glu Leu Pro Leu Gly | 45 |
| | 35 40 | |
| | Gln Ala Pro Pro His Leu Leu Ala Arg Gly Ala Lys Trp Gly Gln | 60 |
| 20 | 50 55 | |
| | Ala Leu Pro Val Ala Leu Val Ser Ser Leu Glu Ala Ala Ser His | 75 |
| | 65 70 | |
| 25 | Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val | 90 |
| | 80 85 | |
| | Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser | 105 |
| | 95 100 | |
| 30 | Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr | 120 |
| | 110 115 | |
| | Pro Gln Lys Leu Ala Phe Ala Glu Cys Leu Cys Arg Gly Cys Ile | 135 |
| 35 | 125 130 | |
| | Asp Ala Arg Thr Gly Arg Glu Thr Ala Ala Leu Asn Ser Val Arg | 150 |
| | 140 145 | |
| 40 | Leu Leu Gln Ser Leu Leu Val Leu Arg Arg Arg Pro Cys Ser Arg | 165 |
| | 155 160 | |
| | Asp Gly Ser Gly Leu Pro Thr Pro Gly Ala Phe Ala Phe His Thr | 180 |
| | 170 175 | |
| 45 | Glu Phe Ile His Val Pro Val Gly Cys Thr Cys Val Leu Pro Arg | 195 |
| | 185 190 | |

Ser Val Gly His His His His His His His His
 200 205 206

<210> 25

5 <211> 271

<212> PRT

<213> Homo sapiens

<400> 25

10 Met Ala Lys Val Pro Asp Met Phe Glu Asp Leu Lys Asn Cys Tyr
 1 5 10 15

Ser Glu Asn Glu Glu Asp Ser Ser Ser Ile Asp His Leu Ser Leu
 20 25 30

15

Asn Gln Lys Ser Phe Tyr His Val Ser Tyr Gly Pro Leu His Glu
 35 40 45

20

Gly Cys Met Asp Gln Ser Val Ser Leu Ser Ile Ser Glu Thr Ser
 50 55 60

Lys Thr Ser Lys Leu Thr Phe Lys Glu Ser Met Val Val Val Ala
 65 70 75

25

Thr Asn Gly Lys Val Leu Lys Lys Arg Arg Leu Ser Leu Ser Gln
 80 85 90

Ser Ile Thr Asp Asp Asp Leu Glu Ala Ile Ala Asn Asp Ser Glu
 95 100 105

30

Glu Glu Ile Ile Lys Pro Arg Ser Ala Pro Phe Ser Phe Leu Ser
 110 115 120

Asn Val Lys Tyr Asn Phe Met Arg Ile Ile Lys Tyr Glu Phe Ile
 125 130 135

35

Leu Asn Asp Ala Leu Asn Gln Ser Ile Ile Arg Ala Asn Asp Gln
 140 145 150

40

Tyr Leu Thr Ala Ala Ala Leu His Asn Leu Asp Glu Ala Val Lys
 155 160 165

Phe Asp Met Gly Ala Tyr Lys Ser Ser Lys Asp Asp Ala Lys Ile
 170 175 180

45

Thr Val Ile Leu Arg Ile Ser Lys Thr Gln Leu Tyr Val Thr Ala
 185 190 195

| | | | | |
|----|---|-----|-----|-----|
| | Gln Asp Glu Asp Gln Pro Val Leu Leu Lys Glu Met Pro Glu Ile | 200 | 205 | 210 |
| 5 | Pro Lys Thr Ile Thr Gly Ser Glu Thr Asn Leu Leu Phe Phe Trp | 215 | 220 | 225 |
| | Glu Thr His Gly Thr Lys Asn Tyr Phe Thr Ser Val Ala His Pro | 230 | 235 | 240 |
| 10 | Asn Leu Phe Ile Ala Thr Lys Gln Asp Tyr Trp Val Cys Leu Ala | 245 | 250 | 255 |
| | Gly Gly Pro Pro Ser Ile Thr Asp Phe Gln Ile Leu Glu Asn Gln | 260 | 265 | 270 |
| 15 | Ala | | | |
| | 271 | | | |
| 20 | <210> 26 | | | |
| | <211> 177 | | | |
| | <212> PRT | | | |
| | <213> Homo sapiens | | | |
| | <400> 26 | | | |
| 25 | Met Glu Ile Cys Arg Gly Leu Arg Ser His Leu Ile Thr Leu Leu | 1 | 5 | 10 |
| | | | | 15 |
| | Leu Phe Leu Phe His Ser Glu Thr Ile Cys Arg Pro Ser Gly Arg | | 20 | 25 |
| 30 | | | | 30 |
| | Lys Ser Ser Lys Met Gln Ala Phe Arg Ile Trp Asp Val Asn Gln | 35 | 40 | 45 |
| | | | | |
| 35 | Lys Thr Phe Tyr Leu Arg Asn Asn Gln Leu Val Ala Gly Tyr Leu | 50 | 55 | 60 |
| | | | | |
| | Gln Gly Pro Asn Val Asn Leu Glu Glu Lys Ile Asp Val Val Pro | 65 | 70 | 75 |
| 40 | | | | |
| | Ile Glu Pro His Ala Leu Phe Leu Gly Ile His Gly Gly Lys Met | 80 | 85 | 90 |
| | | | | |
| | Cys Leu Ser Cys Val Lys Ser Gly Asp Glu Thr Arg Leu Gln Leu | 95 | 100 | 105 |
| 45 | | | | |
| | Glu Ala Val Asn Ile Thr Asp Leu Ser Glu Asn Arg Lys Gln Asp | 110 | 115 | 120 |

| | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Lys | Arg | Phe | Ala | Phe | Ile | Arg | Ser | Asp | Ser | Gly | Pro | Thr | Thr | Ser |
| | | | | | 125 | | | | | 130 | | | | | 135 |
| 5 | Phe | Glu | Ser | Ala | Ala | Cys | Pro | Gly | Trp | Phe | Leu | Cys | Thr | Ala | Met |
| | | | | | 140 | | | | | 145 | | | | | 150 |
| | Glu | Ala | Asp | Gln | Pro | Val | Ser | Leu | Thr | Asn | Met | Pro | Asp | Glu | Gly |
| | | | | | 155 | | | | | 160 | | | | | 165 |
| 10 | Val | Met | Val | Thr | Leu | Phe | Tyr | Phe | Gln | Glu | Asp | Glu | | | |
| | | | | | 170 | | | | | 175 | | 177 | | | |